

State/Industry Ambient Monitoring Network

Air Quality Report

1<sup>st</sup> Quarter 2001

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## SECTION ONE

### DISCUSSION OF MONITORING RESULTS

### Sulfur Dioxide (SO<sub>2</sub>)

There were no exceedances of the state or federal standards during the quarter. The maximum 1-hour concentration was 164 ppb on March 12 at DGC #12; the maximum 3-hour concentration was 116 ppb on March 28 at Mandan - SPM; and, the maximum 24-hour concentration was 38 ppb on January at Mandan - SPM. All sites achieved at least an 80% data recovery for the period.

### Sulfur Dioxide (SO<sub>2</sub>) 5-Minute Average

The maximum 5-minute concentration was 229 ppb on March 28 at Mandan - SPM.

### Ozone (O<sub>3</sub>)

There was no exceedance of the ozone standard during the quarter. The maximum observed 1-hour concentration was 63 ppb on March 3 at Fargo NW. The 4<sup>th</sup> highest 8-hour concentration was 53 ppb on March 3 at Fargo NW. All sites achieved at least an 80% data recovery for the period operated.

### Nitrogen Dioxide (NO<sub>2</sub>)

The maximum 1-hour concentration observed was 57 ppb on March 2 at Fargo NW. All sites achieved at least an 80% data recovery for the period operated.

### Ammonia (NH<sub>3</sub>)

The maximum 1-hour average was 76.9 ppb on February 3 at Beulah - North. An 80% data recovery was achieved for the period operated.

The data will be used as part of the ambient data input used by the newer dispersion models.

### Inhalable Continuous PM<sub>2.5</sub> Particulates

The maximum 1-hour concentration was 151.4 µg/m<sup>3</sup> on March 28 at Beulah - North; the maximum 24-hour concentration was 29.7 µg/m<sup>3</sup> on March 28 at Beulah - North. All sites achieved at least an 80% data recovery for the period operated..

### Inhalable FRM PM<sub>2.5</sub> Particulates

The maximum 24-hour average concentration was 36.0 µg/m<sup>3</sup> on March 29 at Fargo NW. All sites achieved at least an 80% data recovery for the period operated except Sharon.

Sharon failed to achieve 80% data recovery due to sampler problems.

### Inhalable PM<sub>10</sub> Particulates

There was no exceedance of the 24-hour standard during the quarter. The maximum 24-hour average concentration was 20.1 µg/m<sup>3</sup> on March 8 at Bismarck Residential. An 80% data recovery was achieved for the period operated.

The PM10 sampler was terminated in Fargo and moved to Bismarck effective January 1.

### Inhalable PM<sub>10</sub> Sulfates (SO<sub>4</sub>)

The purpose for sulfate analysis is to aid the Department in assessing the impact of SO<sub>2</sub> emissions on inhalable particulate concentrations and visibility. The maximum 24-hour PM<sub>10</sub> sulfate concentration was 4.4 µg/m<sup>3</sup> on February 12 at Bismarck Residential. An 80% data recovery was achieved for the period operated.

The Department has established a PM<sub>2.5</sub> speciation sampler in Bismarck with samplers in Fargo and TRNP - NU to follow. To reduce the number of types of samplers the Department operates, the current PM<sub>10</sub> samplers are being replaced with the same type of samplers as the PM<sub>2.5</sub>. Since the new PM<sub>10</sub> sampler uses a different type of filter and are processed by a contract lab, PM<sub>10</sub> sulfate data will no longer be available after 2<sup>nd</sup> quarter.





## SECTION TWO

### AMBIENT AIR QUALITY DATA

#### SUMMARIES

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD				
Amerada Hess - Tioga #1	2001	JAN-MAR	2141	29 02/25/16	22 02/25/14	21 02/25/17	14 03/02/17	5 02/25	4 02/10	1.5			16.5
Amerada Hess - Tioga #3	2001	JAN-MAR	2142	68 01/20/08	55 03/18/16	43 01/18/02	35 03/03/14	20 03/24	10 02/25	2.9			26.5
Bear Paw - MGP #3	2001	JAN-MAR	2145	21 02/05/10	14 03/01/13	9 03/01/11	9 03/01/14	3 01/15	3 03/01	1.3			11.8
Bear Paw - MGP #5	2001	JAN-MAR	2146	47 02/10/08	20 02/10/09	18 02/10/08	13 02/10/11	6 02/10	3 03/26	1.3			11.0
Beulah - North	2001	JAN-MAR	2148	87 03/28/13	77 03/24/11	67 03/28/14	66 03/24/11	26 03/24	17 03/28	2.7			31.7
DGC #12	2001	JAN-MAR	2149	164 03/12/22	108 03/12/19	99 03/12/23	96 03/12/20	27 03/12	14 03/28	2.8			46.7
DGC #14	2001	JAN-MAR	2148	111 03/15/10	95 01/17/10	65 03/15/14	63 03/15/11	17 03/15	11 03/13	2.1			22.4
DGC #16	2001	JAN-MAR	2010	44 03/16/13	42 03/16/12	42 03/16/14	30 03/26/14	8 03/16	5 01/12	1.6			14.1
DGC #17	2001	JAN-MAR	2125	49 03/22/14	46 03/22/13	45 03/22/14	16 01/12/17	9 03/22	5 01/12	1.5			12.6
Dunn Center	2001	JAN-MAR	1875	19 02/14/05	15 02/14/06	12 02/14/08	11 02/14/05	5 02/14	4 02/26	1.6			32.6
Fargo NW	2001	JAN-MAR	2144	12 02/11/05	9 02/27/23	7 02/11/05	7 02/27/23	4 02/27	3 02/11	1.2			11.5
Hannover	2001	JAN-MAR	2147	85 01/24/03	62 03/25/09	51 03/25/11	50 01/24/05	16 01/24	10 03/25	2.1			25.4
Mandan - SPM	2001	JAN-MAR	2139	140 03/28/12	119 03/28/13	116 03/28/14	77 02/03/20	38 01/15	33 02/13	7.8			56.6
Mandan NW - SPM	2001	JAN-MAR	2147	87 03/28/15	79 03/28/16	68 03/28/17	59 03/28/11	23 03/28	11 02/01	3.5			44.4

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : SULFUR DIOXIDE (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A 3 - HOUR		24 - HOUR		ARITH MEAN	1HR #>273	24HR #>99	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD				
TRNP - SU (Painted Canyon)	2001	JAN-MAR	2147	20 02/07/17	15 02/07/16	15 02/07/17	5 02/07/14	4 02/07	2 02/19	1.1			5.2

The maximum 1-hour concentration is 164 ppb at DGC #12 on 03/12/22  
The maximum 3-hour concentration is 116 ppb at Mandan - SPM on 03/28/14  
the maximum 24-hour concentration is 38 ppb at Mandan - SPM on 01/15

\* The air quality standards are:

STATE Standards -

- 1) 273 ppb maximum 1-hour average concentration.
- 2) 99 ppb maximum 24-hour average concentration.
- 3) 23 ppb maximum annual arithmetic mean concentration.

FEDERAL Standards -

- 1) 500 ppb maximum 3-hour concentration not to be exceeded more than once per year.
- 2) 140 ppb maximum 24-hour concentration not to be exceeded more than once per year.
- 3) 30 ppb annual arithmetic mean.

\*\*\* Less than 80% of the possible samples (data) were collected.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Sulfur Dioxide 5-Minute Averages (ppb)

LOCATION	YEAR	PERIOD	OBS	5 - M I N U T E			M A X I M A			# HOURS >600	% >MDV
				1ST	DATE	2ND	DATE	3RD	DATE		
					MM/DD/HH		MM/DD/HH		MM/DD/HH		
Bear Paw - MGP #3	2001	JAN-MAR	2145	58	02/05/10	38	03/20/08	28	02/26/13	0	25.4
Bear Paw - MGP #5	2001	JAN-MAR	2146	79	02/10/08	58	02/10/09	38	03/08/11	0	26.9
Beulah - North	2001	JAN-MAR	2148	169	03/28/14	152	03/28/13	139	03/24/09	0	50.9
Dunn Center	2001	JAN-MAR	1875	22	02/14/05	18	02/14/06	18	03/14/11	0	49.2
Fargo NW	2001	JAN-MAR	2144	12	02/11/05	9	02/27/23	8	02/11/04	0	11.5
Hannover	2001	JAN-MAR	2147	173	01/24/03	118	01/24/02	93	03/25/10	0	35.0
Mandan - SPM	2001	JAN-MAR	2139	229	03/28/13	225	02/03/20	188	02/03/21	0	67.6
Mandan NW - SPM	2001	JAN-MAR	2147	222	01/08/14	126	03/28/15	112	03/28/09	0	59.3
TRNP - SU (Painted Canyon)	2001	JAN-MAR	2147	20	02/07/17	15	02/07/16	10	02/07/15	0	5.2

The maximum 5-minute concentration is 229 ppb at Mandan - SPM on 03/28/13

\* No Standard is currently in effect:

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Ozone (PPB)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	1 - HOUR		M A X I M A		8 - HOUR		4TH	1HR #>120	8HR #>80
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH	4TH MM/DD/HH			
Beulah - North	2001	JAN-MAR	2147	57 03/03/21	56 03/03/20	52 03/03/18	47 03/03/17	47 03/03/19	47 03/03/16			
Dunn Center	2001	JAN-MAR	2148	56 03/03/23	56 03/04/00	54 03/03/22	49 03/03/21	49 03/03/23	49 03/03/20			
Fargo NW	2001	JAN-MAR	2146	63 03/03/16	61 03/01/15	58 03/01/11	53 03/01/10	53 03/27/12	53 03/03/10			
Hannover	2001	JAN-MAR	2150	57 03/03/19	56 03/03/20	53 03/03/17	49 03/03/16	49 03/03/18	49 03/03/16			
TRNP - SU (Painted Canyon)	2001	JAN-MAR	2151	54 03/02/15	53 03/02/13	51 03/02/12	47 03/02/11	47 03/02/10	47 03/02/09			

The maximum 1-hour concentration is 63 ppb at Fargo NW on 03/03/16  
The 4th highest 8-hour concentration is 53 ppb at Fargo NW on 03/03/10

\* The air quality standards for ozone are:

STATE - 120 ppb not to be exceeded more than once per year.

FEDERAL - Fourth highest daily maximum 8-hour averages for a 3-year period not to exceed 80 ppb.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Nitrogen Dioxide (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR		ARITH MEAN	% >MDV
				1ST MM/DD/HH	2ND MM/DD/HH		
Beulah - North	2001	JAN-MAR	2145	24 02/08/21	20 03/28/13	3.9	86.8
DGC #12	2001	JAN-MAR	2138	25 01/30/03	23 02/08/21	4.1	94.5
DGC #17	2001	JAN-MAR	2113	42 01/12/10	41 02/10/09	3.3	82.3
Dunn Center	2001	JAN-MAR	2141	22 03/28/20	20 03/28/21	2.6	69.2
Fargo NW	2001	JAN-MAR	2143	57 03/02/22	56 03/02/20	8.6	84.2
Hannover	2001	JAN-MAR	1428 ***	26 02/09/21	23 02/09/19	2.5	65.2

The maximum 1-hour concentration is 57 ppb at Fargo NW on 03/02/22

\* The air quality standards are:  
STATE - 53 ppb maximum annual arithmetic mean.  
FEDERAL - 53 ppb annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Ammonia (ppb)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR					
				1ST MM/DD/HH	2ND MM/DD/HH	3RD MM/DD/HH	4TH MM/DD/HH	5TH MM/DD/HH	6TH MM/DD/HH
Beulah - North	2001	JAN-MAR	2133	76.9 02/03/22	71.9 01/30/07	63.7 02/03/21	62.8 02/03/20	6.8 03/30/18	5.5 02/03/16

\* No standard is currently in effect.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable Continuous PM<sub>2.5</sub> (µg/m³)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	M A X I M A 1 - HOUR						24 - HOUR		MEAN	1HR #>150	24HR #>65
				1ST MM/DD/HH	2ND MM/DD/HH	1ST MM/DD	2ND MM/DD	3RD MM/DD	4TH MM/DD					
Beulah - North	2001	JAN-MAR	2154	151.4 03/28/13	150.0 03/28/14	29.7 03/28	17.2 03/24	16.5 02/09	15.4 01/15	6.7	1			
Fargo NW	2001	JAN-MAR	2003	32.5 03/16/09	28.3 03/16/08	11.5 03/29	8.2 03/16	8.1 03/03	7.2 03/28	3.7				

The maximum 1-hour concentration is 151.4 µg/m³ at Beulah - North on 03/28/13  
The highest 24-hour concentration is 29.7 µg/m³ at Beulah - North on 03/28

\* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m³.
- 2) Annual: 3-year average not to exceed 15 µg/m³.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable FRM PM<sub>2.5</sub> Particulates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#> 65	AM>15	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Beulah - North	2001	JAN-MAR	15	3.1	16.4 02/12	12.5 03/08	12.0 01/13	7.5			100.0
Bismarck Residential	2001	JAN-MAR	29	1.9	19.7 02/12	14.8 02/09	14.5 03/08	7.9			96.5
Dickinson Residential	2001	JAN-MAR	15	1.8	16.7 01/13	13.0 02/12	12.6 02/24	7.1			86.6
Fargo NW	2001	JAN-MAR	23	3.2	36.0 03/29	21.1 01/10	19.8 01/13	11.6			100.0
Grand Forks - North	2001	JAN-MAR	30	0.5	35.1 03/29	25.9 02/12	19.0 02/06	10.1			96.6
Sharon	2001	JAN-MAR	11 ***	2.8	14.1 02/12	10.0 02/24	8.7 01/13	6.8			100.0
TRNP - SU (Painted Canyon)	2001	JAN-MAR	12	1.5	13.3 01/13	10.1 02/12	8.4 02/24	6.0			91.6

The maximum 24-hour concentration is 36.0 µg/m<sup>3</sup> at Fargo NW on 03/29

\* The ambient air quality standards are:

FEDERAL Standards -

- 1) 24-hour: 3-year average of 98th percentiles not to exceed 65 µg/m<sup>3</sup>.
- 2) Annual: 3-year average not to exceed 15 µg/m<sup>3</sup>.



COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>10</sub> Particulates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#>150	AM>50	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Bismarck Residential	2001	JAN-MAR	14	5.6	20.1 03/08	16.4 02/12	16.4 02/24	11.6			100.0

The maximum 24-hour concentration is 20.1 µg/m<sup>3</sup> at Bismarck Residential on 03/08

\* The STATE and FEDERAL air quality standards are:

- 1) 150 µg/m<sup>3</sup> maximum averaged over a 24-hour period with no more than one expected exceedance per year.
- 2) 50 µg/m<sup>3</sup> expected annual arithmetic mean.

COMPARISON OF AIR QUALITY DATA WITH  
THE NORTH DAKOTA AMBIENT AIR QUALITY STANDARDS \*

POLLUTANT : Inhalable PM<sub>10</sub> Sulfates (µg/m<sup>3</sup>)

LOCATION	YEAR	SAMPLING PERIOD	NUM OBS	MIN	M A X I M A 24 - HOUR			ARITH MEAN	#>15.	AM>5.	% >MDV
					1ST MM/DD	2ND MM/DD	3RD MM/DD				
Bismarck Residential	2001	JAN-MAR	14	0.5	4.4 02/12	2.3 02/24	2.1 01/19	1.5			100.0

The maximum 24-hour concentration is 4.4 µg/m<sup>3</sup> at Bismarck Residential on 02/12

\* No standard is currently in effect.



## SECTION THREE

### EXCEEDANCE LISTINGS

By Site Date Hour

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> (µg/m<sup>3</sup>)

The \* Identifies the Exceedances

NONE

By Date Hour Site

All Units Are in Parts Per Billion Except Wind Direction (Degrees),  
Wind Speed (MPH), CO (PPM), and PM<sub>2.5</sub> and PM<sub>10</sub> (µg/m<sup>3</sup>)

The \* Identifies the Exceedances

NONE